

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): A fuel vapor leak detecting apparatus, comprising:

a valve which is in a vapor purge system including a canister that is communicated with a fuel tank and an internal combustion engine, and which controllably closes the vapor purge system;

a pressurizing section which introduces atmospheric air into the vapor purge system to pressurize the vapor purge system; and

an internal-pressure measuring section which detects an internal pressure of the vapor purge system;

wherein the pressurizing section supplies the air for a predetermined time in a state where the vapor purge system is closed, and, when the internal pressure measured by the internal-pressure measuring section at the air supply is equal to or lower than a preset criterion pressure, it is judged that a leak occurs, and

wherein the pressurizing section is a jet pump using a gasoline flow from a fuel pump which is submerged in the fuel tank.

2. (currently amended): The fuel vapor leak detecting apparatus according to claim 1, wherein an elapsed time from beginning of pressurization to a timing when a difference in pressure rise rate between two pressure rise curves becomes large is set as a second predetermined time, the two pressure rise curves being respectively in cases where a leak hole corresponding to the leak criterion exists, and where a leak does not occur;

a pressure rise rate at a timing of an elapse of the second predetermined time in the case where a leak hole exists is previously stored as a predetermined pressure rise rate; and,

when a pressure rise rate in a case where the pressurizing section performs pressurization for the second predetermined time in a state where the vapor purge system is closed is equal to or smaller than the predetermined pressure rise rate, it is judged that a leak occurs.

3. (original): The fuel vapor leak detecting apparatus according to claim 1, further comprising: a gasoline remaining amount grasping section which detects at least a remaining amount of gasoline in the fuel tank;

wherein the leak criterion is corrected on the basis of the remaining amount of gasoline detected by the gasoline remaining amount grasping section.

4. (original): The fuel vapor leak detecting apparatus according to claim 1 wherein the pressurizing section includes an air pump.

5-8. (canceled).

9. (currently amended): A fuel vapor leak detecting apparatus, comprising:

a bypass valve which is openable and closable, which is in a vapor purge system including a canister that is communicated with a fuel tank and an internal combustion engine, and which bypasses a two-way valve interposed between the fuel tank and the canister;

a reference orifice which is connected in series to the bypass valve;

a communication valve which controls communication between the canister and an ambient area;

a pressurizing section which introduces atmospheric air into the fuel tank; and

an internal-pressure measuring section which detects an internal pressure of the fuel tank;

wherein a reference pressure rise rate at a timing when the pressurizing section supplies the air for a second predetermined time in a state where the communication valve and the bypass valve are opened is set, and,

when a pressure rise rate at a timing when a time which is twice the second predetermined time has elapsed after the communication valve is closed is equal to or smaller than the reference pressure rise rate, it is judged that a leak occurs.

10. (currently amended): The fuel vapor leak detecting apparatus according to claim 9,

wherein a reference pressure rise rate at a timing when the pressurizing section supplies the air for the second predetermined time in a state where the communication valve and the bypass valve are opened is set;

when a pressure rise rate at a timing when a time which is twice the second predetermined time has elapsed after the communication valve is closed is equal to or smaller than the reference pressure rise rate, the bypass valve is closed; and,

when a pressure rise rate at a timing when a time which is thrice the second predetermined time has elapsed after the bypass valve is closed is equal to or larger than the reference pressure rise rate, it is judged that a leak occurs on a side of the canister, and, when the pressure rise rate at the timing is smaller than the reference pressure rise rate, it is judged that a leak occurs on a side of the fuel tank.

11. (original): The fuel vapor leak detecting apparatus according to claim 9, further comprising: a gasoline remaining amount grasping section which detects at least a remaining amount of gasoline in the fuel tank;

wherein the leak criterion is corrected on the basis of the remaining amount of gasoline detected by the gasoline remaining amount grasping section.

12. (original): The fuel vapor leak detecting apparatus according to claim 9, wherein the pressurizing section includes an air pump.

13. (original): The fuel vapor leak detecting apparatus according to claim 9, wherein the pressurizing section is a jet pump using a gasoline flow from a fuel pump which is submerged in the fuel tank.

14. (original): The fuel vapor leak detecting apparatus according to claim 9, wherein the pressurizing section is a jet pump using a discharge flow from a pressure regulator which adjusts a pressure of gasoline supplied from a fuel pump submerged in the fuel tank to the internal combustion engine.

15. (original): The fuel vapor leak detecting apparatus according to claim 9, wherein the pressurizing section is a jet pump using a flow of return gasoline which is a residual as a result of consumption of gasoline in the internal combustion engine, the gasoline being supplied from a fuel pump submerged in the fuel tank to the internal combustion engine.

16. (currently amended): The fuel vapor leak detecting apparatus according to claim 9, wherein a jet pump which transfers gasoline from another chamber of a saddle type fuel tank by a flow of excess gasoline from the fuel pump is caused to function as the pressurizing section by, when a leak is detected, switching a suction portion of the jet pump to a pipe for introducing atmospheric air.

17. (canceled).

18. (new): A fuel vapor leak detecting apparatus, comprising:

a valve which is in a vapor purge system including a canister that is communicated with a fuel tank and an internal combustion engine, and which controllably closes the vapor purge system;

a pressurizing section which introduces atmospheric air into the vapor purge system to pressurize the vapor purge system; and

an internal-pressure measuring section which detects an internal pressure of the vapor purge system;

wherein the pressurizing section supplies the air for a predetermined time in a state where the vapor purge system is closed, and, when the internal pressure measured by the internal-pressure measuring section at the air supply is equal to or lower than a preset criterion pressure, it is judged that a leak occurs,

wherein an elapsed time from beginning of pressurization to a time when a difference in a pressure rise rate between two pressure rise curves becomes large is set as a second predetermined time, the two pressure rise curves being respectively in cases where a leak hole corresponding to leak criterion exists, and where a leak hole does not exist,

a pressure rise rate at a timing of an elapse of the second predetermined time in the case where a leak hole exists is previously stored as a predetermined pressure rise rate, and,

when a pressure rise rate in a case where the pressurizing section performs pressurization for the second predetermined time in a state where the vapor purge system is closed is equal to or smaller than the predetermined pressure rise rate, it is judged that a leak occurs.

19. (new): A fuel vapor leak detecting apparatus, comprising:

a valve which is in a vapor purge system including a canister that is communicated with a fuel tank and an internal combustion engine, and which controllably closes the vapor purge system;

a pressurizing section which introduces atmospheric air into the vapor purge system to pressurize the vapor purge system; and

an internal-pressure measuring section which detects an internal pressure of the vapor purge system;

wherein the pressurizing section supplies the air for a predetermined time in a state where the vapor purge system is closed, and, when the internal pressure measured by the internal-pressure measuring section at the air supply is equal to or lower than a preset criterion pressure, it is judged that a leak occurs, and

wherein the pressurizing section is a jet pump using a discharge flow from a pressure regulator which adjusts a pressure of gasoline supplied from a fuel pump submerged in the fuel tank to the internal combustion engine.

20. (new): A fuel vapor leak detecting apparatus, comprising:

a valve which is in a vapor purge system including a canister that is communicated with a fuel tank and an internal combustion engine, and which controllably closes the vapor purge system;

a pressurizing section which introduces atmospheric air into the vapor purge system to pressurize the vapor purge system; and

an internal-pressure measuring section which detects an internal pressure of the vapor purge system;

wherein the pressurizing section supplies the air for a predetermined time in a state where the vapor purge system is closed, and, when the internal pressure measured by the internal-pressure measuring section at the air supply is equal to or lower than a preset criterion pressure, it is judged that leak occurs, and

wherein the pressurizing section is a jet pump using a flow of return gasoline which is residual as a result of consumption of gasoline in the internal combustion engine, the gasoline being supplied from a fuel pump submerged in the fuel tank to the internal combustion engine.

21. (new): A fuel vapor leak detecting apparatus, comprising:

a valve which is in a vapor purge system including a canister that is communicated with a fuel tank and an internal combustion engine, and which controllably closes the vapor purge system;

a pressurizing section which introduces atmospheric air into the vapor purge system to pressurize the vapor purge system; and

an internal-pressure measuring section which detects an internal pressure of the vapor purge system;

wherein the pressurizing section supplies the air for a predetermined time in a state where the vapor purge system is closed, and, when the internal pressure measured by the internal-pressure measuring section at the air supply is equal to or lower than a preset criterion pressure, it is judged that leak occurs, and

wherein the fuel tank is a saddle type fuel tank and a jet pump is provided which transfers gasoline from a chamber of the saddle type fuel tank by a flow of excess gasoline from a fuel pump, the jet pump functions as the pressurizing section by, when a leak is detected, switching a suction portion of the jet pump to a pipe for introducing atmospheric air.

22. (new): A fuel vapor leak detecting apparatus, comprising:

a valve which is in a vapor purge system including a canister that is communicated with a fuel tank and an internal combustion engine, and which controllably closes the vapor purge system;

a bypass valve which is openable and closable, and which bypasses a two-way valve interposed between the fuel tank and the canister;

a pressurizing section which introduces atmospheric air into the vapor purge system to pressurize the vapor purge system;

an internal-pressure measuring section which detects an internal pressure of the vapor purge system;

a reference orifice which is connected in series to the bypass valve; and

a communication valve which controls communication between the canister an ambient area;

wherein the pressurizing section supplies the air for a predetermined time in a state where the vapor purge system is closed, and, when the internal pressure measured by the internal-pressure measuring section at the air supply is equal to or lower than a preset criterion pressure, it is judged that a leak occurs,

wherein the pressurizing section is a jet pump using a gasoline flow from a fuel pump which is submerged in the fuel tank,

wherein a reference pressure rise rate at a timing when the pressurizing section supplies the air for a second predetermined time in a state where the communication valve and the bypass valve are opened is set, and

when a pressure rise rate at a timing when a time which is twice the second predetermined time has elapsed after the communication valve is closed is equal to or smaller than the reference pressure rise rate, it is judged that a leak occurs.